

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
3 November 2005 (03.11.2005)

PCT

(10) International Publication Number
WO 2005/103755 A1

(51) International Patent Classification⁷: **G01S 13/84**

(21) International Application Number:
PCT/JP2005/008101

(22) International Filing Date: 21 April 2005 (21.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2004-126588 22 April 2004 (22.04.2004) JP

(71) Applicant (for all designated States except US): MAT-SUSHITA ELECTRIC INDUSTRIAL CO., LTD. [JP/JP]; 1006, Oaza Kadoma, Kadoma-shi, Osaka, 5718501 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): MIYASHITA, Norihiro.

(74) Agents: TAKAMATSU, Takeshi et al.; Eikoh Patent Office, 13th Floor, ARK Mori Building, 12-32, Akasaka 1-chome, Minato-ku, Tokyo 1076013 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

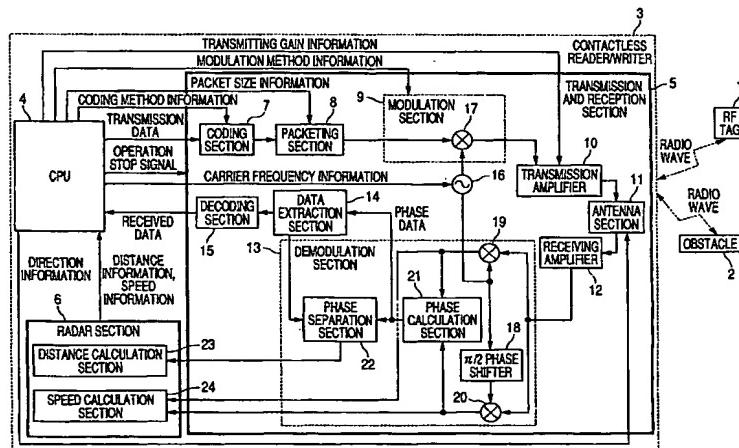
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: CONTACTLESS READER/WRITER



(57) Abstract: It is an object of the invention to provide a contactless reader/writer comprising a transmission section for transmitting a plurality of transmission signals using carrier waves of different frequencies, a reception section for receiving a plurality of reply signals which are a response to a plurality of transmission signals transmitted by the transmission section, a phase calculation section for calculating phase data of the reply signals on the basis of the reply signals, a distance calculation section for calculating a distance to an object having returned the reply signal, on the basis of the phase data from the phase calculation section and/or a speed calculation section for calculating a frequency component of baseband signals on the basis of the baseband signals acquired from the received signal, and thereby calculating a traveling speed of an object having returned the reply signal on the basis of the frequency component, and a control section for controlling a transmission direction of the transmission signals transmitted from the transmission section.

WO 2005/103755 A1



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.